

**EXHIBIT B**

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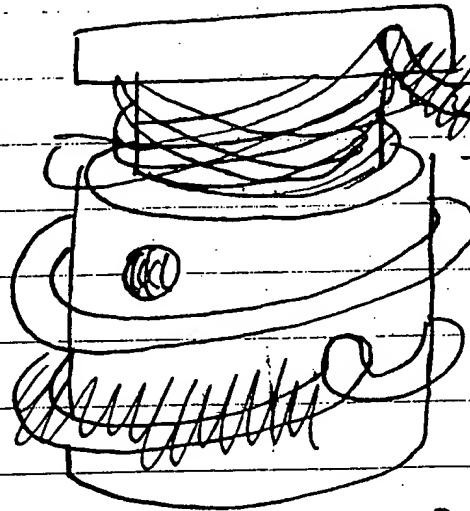
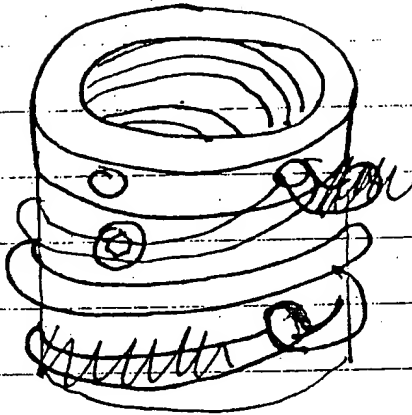
# CONSTANT TENSION

CARTONVILLE

MARCH 1998

L.H. THDS.  
DIRECTION  
TO UNSCREW

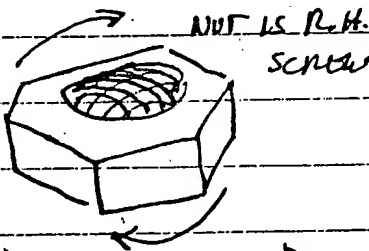
HEX SOC.  
DO NOT  
SET SCREW



TO SET SPR.

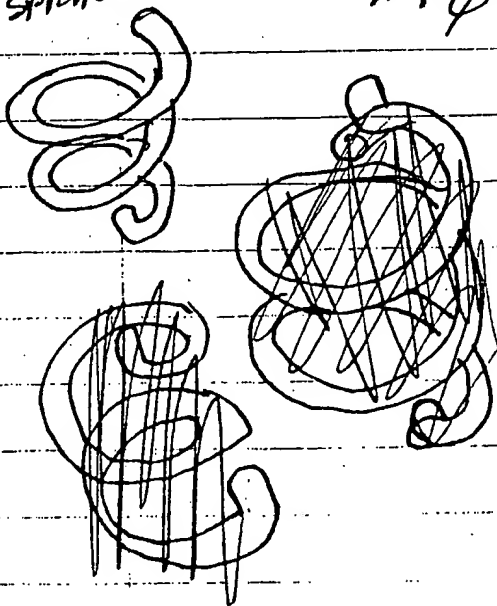
1"

3/4" TRAVEL

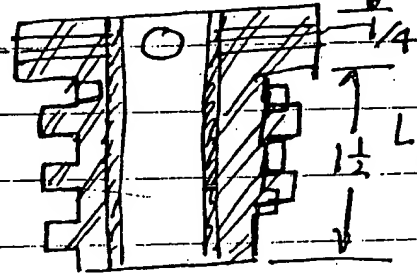


NUT IS R.H.  
SCREW

TORSION  
SPRING



DIH. OF  
A 1"  $\phi$  WASHER

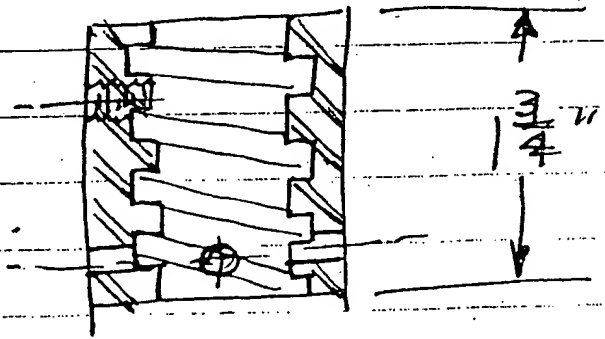


3/4"  $\phi$  SLEEVE

1/2"  $\phi$  SLEEVE

1/4"

1 1/2" L.H. THDS

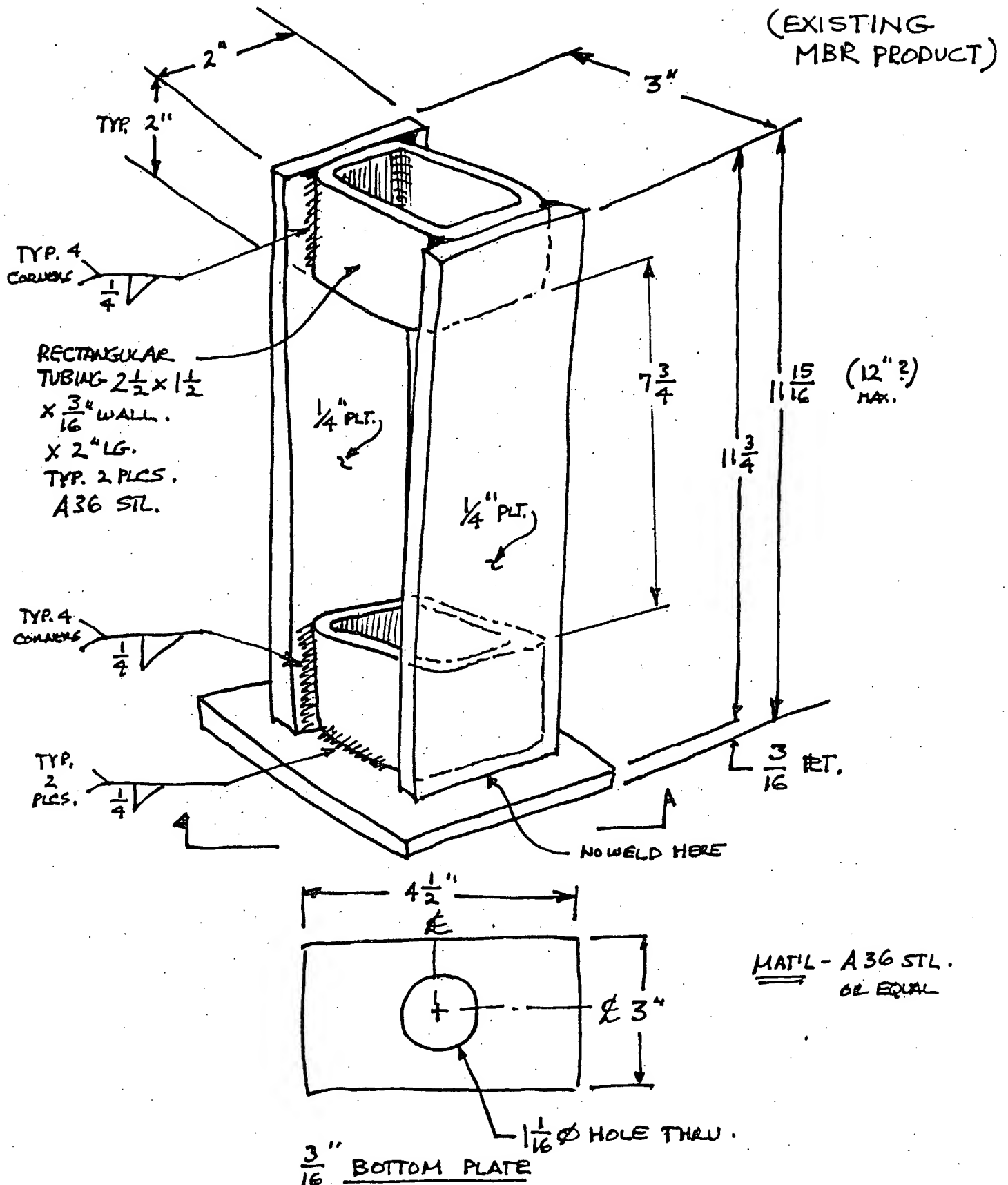


3 1/4"

# BRACKET - ENGINEERING SKETCH

## MBR TIE DOWN SYSTEM (NO SCALE)

MAR 19 1998  
By *al. Lemo*



PROCTOR DEVELOPMENT

APR 01 1998

CALC. BY D. J. Jones

STRENGTH OF 1 3/4 - 4 ACME - 2 G - LH THREADS:  
USING AISI 1026 MECH. STL. TUBING.

1.  $E_s = 1.6145 \text{ P.D. MAX.} - .00794 = 1.6066$   
 $K_s = 1.4800 \text{ MINOR DIA. MAX.} - 1.5 \times .00794 = 1.46809$   
 $K_N = 1.5916 \text{ P.D. MINIMUM}$   
 $P = .250$

TENSILE STRENGTH:

1A.  $\text{STRESS AREA} = \pi \left( \frac{E_s + K_s}{4} \right)^2 = \pi \left( \frac{1.6066 + 1.46809}{4} \right)^2$   
 $= 1.85623 \text{ in}^2 - (1" \text{ CENTER HOLE AREA})$   
 $\quad \quad \quad .7854 \text{ in}^2$   
 $= \underline{\underline{1.07083 (A_t)}}$

1B.  $\text{SHEAR AREA} = \pi K_N \left[ 0.5 + \frac{1}{P} \tan 14\frac{1}{2}^\circ (E_s - K_N) \right]$   
 $= 3.1416 \times 1.5916 \left[ 0.5 + 4 \times .258617584 (1.6066 - 1.5916) \right]$   
 $= 5 \left[ .017456686 \right] = \underline{\underline{.0873 \text{ in}^2}}$

2. AISI 1026 STEEL = TENSILE: 55,000 PSI (S)  
 YIELD : 30,000 PSI

**P** = LOAD TO BREAK THREADED PORTION OF SCREW  
 IN TENSION.

$P = S A_t = 55,000 \times 1.07083 = \underline{\underline{58,895 \text{ LBS.}}}$   
 OR 29.5 TONS

USE SUB ACME THREADS

PROCTOR DEVELOPMENT

# "RYERSON" STEEL CO. PRICE CHECK

APR 02 1998

*W. Lemm*

ITEM.	20 FT. RANDOM LENGTHS - COST EACH 20' LG.		20 FT. MAKES PIECES	COST PER FT.	20'0" MAT'L COST NO. EACH LENGTHS	
1.	2 $\frac{1}{4}$ O.D. X 1" I.D. X 2 $\frac{1}{4}$	\$ 457.	(106)	\$ 22.85 / FT.	(1) ea.	\$ 4.31
	SEAMLESS #1026	344.	(106)	17.20	(5)	3.24
	MECH. STL. TUBING (SCREW)	319.	(106)	15.95	(20)	3.01
2.	2 $\frac{1}{4}$ O.D. X 1 $\frac{1}{2}$ I.D.	\$ 211.	(120)	\$ 10.55 / FT.	(1) ea.	\$ 1.76
	D.O.M. #1026 WELDED (NUT)	177.	(120)	8.85	(5)	1.48
	MECH. STL. TUBING	168.	(120)	8.40	(20)	1.40
	(DRAWN OVER HANDLER)					

MAT'L. STOCK COST (1.) \$ 3.01

(2.) 1.40

\$ 4.41

TUBE ASSEMBLY

JUST IN MAT'L COST

MACHINING SHOP COST NOT INCLUDED.

APR 02 1998

TYP. WASHER SIZES

WASHER (AMERICAN NAT'L. STANDARD TYPE B)  
(PLAIN) (TYPE A HAS BEEN DISCONTINUED)

1.  $1^{\prime\prime}\phi$  SIZE WASHER -  $1.062^{+.030}_{-.007}$  I.D. X  $2.500^{+.030}_{-.007}$  O.D. X  
.160 THK. (.146/.174 MIN/MAX.)
2.  $3/4^{\prime\prime}\phi$  SIZE WASHER -  $0.812^{+.030}_{-.007}$  I.D. X  $2.000^{+.030}_{-.007}$  O.D. X  
.160 THK. (.146/.174 MIN/MAX.)
3.  $1/2^{\prime\prime}\phi$  SIZE WASHER -  $0.531^{+.015}_{-.005}$  I.D. X  $1.250^{+.030}_{-.007}$  O.D. X  
.100 THK. (.090/.112 MIN/MAX.)

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